
The Relationship between Language Spoken and Smoking Among Hispanic-Latino Youth in New York City

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The sample included 3,129 Hispanic-Latino students in 47 New York City public and parochial schools. Of the total sample, 43 percent were Puerto Rican, 20 percent Dominican, 7 percent Colombian, and 7 percent Ecuadorian. The students completed questionnaires that were designed to assess social and environmental influences on their smoking and determine what languages they spoke (English and Spanish) with parents and friends. Self-reported smoking data were collected by means of the bogus pipeline to enhance the veracity of self-reports. In the logistic regression model, including background, social influence, and language use variables, 101 students were smokers.

Synopsis

This study was designed to examine the relationship between language spoken and smoking (at least once a month) among New York City Hispanic-Latino adolescents, using a large sample of specific Hispanic-Latino subgroups (Puerto Rican, Dominican, Colombian, and Ecuadorian youth) and controlling for social and environmental factors.

Logistic regression analysis indicated that being bicultural (speaking both English and Spanish) at home and with friends appeared to increase the odds of currently smoking. Separate logistic regression analyses for girls and boys revealed that being bicultural at home increased the odds of currently smoking for boys but not girls. Results are discussed in terms of their implications for prevention.

THE HISPANIC-LATINO POPULATION in the United States has been identified as a group at increasing risk for developing smoking related cancer (1). While the overall prevalence of smoking is declining in the United States, the few studies that have examined smoking patterns among ethnic minorities indicate that certain Hispanic-Latino subgroups have higher smoking prevalence than the general population (2).

In New York City, the major Hispanic-Latino groups are Puerto Ricans, Dominicans, Colombians, and Ecuadorians. The prevalence of smoking appears high in the Puerto Rican population (2), and the rate of smoking among Puerto Rican women has increased steadily. Smoking declined among all men except Puerto Ricans during the 1970s and 1980s. More than half of Puerto Rican men smoke (3). Information about smoking prevalence among Dominicans, Colombians, and Ecuadorians, specifically, is very limited or not available.

Understanding the etiology of smoking facilitates the development and identification of effective smoking prevention interventions. Children's experimentation with cigarettes begins in adolescence, and Hispanic-Latino youth appear even more likely to try smoking. For example, Marcus and Crane report higher rates of early experimental smoking among Hispanic-Latino elementary students compared with non-Hispanic-Latino students (1). Similarly, in a survey of school children in the southwestern United States, Greenberg and coworkers reported increased smoking among Hispanic-Latino boys compared with non-Hispanic-Latino boys (4). Thus Hispanic-Latino youth appear to be at higher risk for the early initiation of smoking behavior.

Although the demographic characteristics and social and environmental factors associated with the early initiation of smoking have been identified for white, middle-class youth, few studies have explored the causes of smoking among Hispanic-Latino youth

(3). One of the most powerful predictors of smoking is whether peers and parents smoke (5–7). In a previous study with sixth and seventh graders, we found that social and environmental variables predicted smoking status for Hispanic-Latino youth (8). Similarly, in their study in Boston, Smith and colleagues found that social influences are a major predictor of smoking among Puerto Rican high school students (9).

An additional potential risk factor that applies especially to Hispanic-Latino youth is the extent of their acculturation—changes in behavior, attitudes, norms, and values as a result of exposure to a new culture (10). A “reliable shorthand measure” to assess acculturation, according to Marin and Marin (11), is language use. They found that a four-item scale dealing with language use was highly correlated with age at arrival in the United States, length of time in the United States, and the respondent’s age group, all of which serve as standard validation criteria for acculturation scales.

The association between smoking and acculturation has not shown consistent results and is often different for men and women. Some research has indicated that less acculturated men had a higher smoking rate than more acculturated men, but more acculturated women had a higher smoking rate than less acculturated women (12,13). Another study showed that more acculturated Mexican American women had a higher smoking rate than their less acculturated counterparts, but there was no relationship for Mexican American men (2). Finally, in a study of older Mexican Americans and their relatives, acculturation had no relationship to smoking (14).

For the past 5 years, we have evaluated the efficacy of a competence enhancement approach to smoking prevention in schools with students bodies that were at least 25 percent Hispanic-Latino. As part of this larger effort, we reported in an earlier pilot study of 471 seventh graders that more acculturated students, as measured by the language they used in speaking with their parents, were more likely to report smoking in the last month (15). The pilot study included a small sample, however, and did not examine the relationship for boys and girls separately.

Smith and colleagues found that acculturation, as measured by three items concerning language use, predicted smoking for high school boys but not girls (9). Therefore, since previous studies have suggested a differential effect of acculturation on smoking with respect to sex, the effect of acculturation on smoking prevalence for Hispanic-Latino youth should be examined separately for males and females.

Our current study, based on the pretest data set of

a full-scale smoking prevention project, was designed to examine the relationship between language and smoking among New York City Hispanic-Latino populations, using a larger sample of specific subgroups (Puerto Rican, Dominican, Colombian, and Ecuadorian) and controlling for social and environmental factors. This study is important because there is limited information about acculturation and smoking during young adolescence in Hispanic-Latino populations generally, and among Puerto Rican adolescents, in particular, and there are even less data available on Dominican, Colombian, and Ecuadorian youth. Since the effect of acculturation seems to depend on sex, we examine smoking separately for boys and girls.

Methods

A total of 47 public and Catholic schools in New York City with 25 percent or more Hispanic-Latino students participated in the project. All sixth- and seventh-graders in English-speaking, mainstream classes participated in the study. A passive consent procedure was used to obtain parental consent, and more than 90 percent of the eligible students completed the survey.

Schools were targeted for inclusion in this study based on size and location. Those meeting the recruitment criteria received letters describing the project, as well as telephone calls from project staff members. The process of obtaining administrative clearance was slower in some schools than in others, and recruitment continued until the goal of 47 schools was reached.

Of the schools participating, 36 were Catholic schools and 11 were public schools. The sample was evenly distributed between the two types of schools, with 2,681 students (49 percent) from Catholic schools and 2,820 students (51 percent) from public schools. Both public and Catholic schools in New York City serve urban minority youth from low-income families; 39 of the 47 schools (83 percent) in the current study served youth from families with average income levels at or below 150 percent of the Federal poverty level. These schools are representative of New York City public and Catholic schools with student bodies that are predominantly Hispanic-Latino.

Subjects. Of the total sample, 3,129 sixth- and seventh-grade students who identified themselves as Latino or Hispanic on the survey questionnaire participated in the current study. The mean age of students was 12.61 years (range 10–18 years) at the

time of the survey. Of the Hispanic-Latino students, 52 percent were female. Forty-three percent of the students were Puerto Rican, 20 percent were Dominican, 7 percent were Colombian, and 7 percent were Ecuadorian. The remaining 23 percent of the students identified with another subgroup (for example, Mexican, Cuban), or with more than one subgroup. We reported the prevalence of smoking among this sample in a previous study (8), which, in general, appeared comparable to national smoking data on non-Hispanic-Latino white youth (16).

Survey instrument. Data for this study were collected using a 143-item questionnaire with items concerning demographic characteristics, substance use, language use with families and friends, and psychosocial factors. It included items on self-reported smoking and smoking by family members and friends.

Background variables. Items were collected to determine basic background information concerning sex, age, and ethnicity. If students indicated that they were Latino or Hispanic, they were asked to indicate their subgroup status, which included Puerto Rican, Dominican, Colombian, Ecuadorian, and other subgroups. Only those students identifying themselves as Latino or Hispanic were included in the present study.

Smoking measures. A general 11-point scale was used to assess smoking frequency. Specifically, students were asked to respond to the question, "How often do you currently smoke?" Response items ranged from "I have never smoked" to "A pack or more each day." Data from this scale were used to create a dichotomous measure of current smoking that compared students who reported that they usually smoked once a month or more with students who smoked less than once a month or never tried cigarettes.

Language use. Two measures of language usage were included. Students were asked what language they normally speak at home with their parents. Response options on a 5-point scale were "only English," "mostly English," "English and Spanish," "mostly Spanish," and "only Spanish." Students were also asked what language they normally speak with their friends, using the same five response options. After examining their distributions, these scales were collapsed into three categories. For language use with parents the three categories were (a) only or mostly English, (b) Spanish and English,

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and (c) mostly or only Spanish. For language used with friends, the three categories were (a) only English, (b) mostly English, and (c) English and Spanish.

These measures were not intended as a complete measure of acculturation, which involves a multidimensional complex process of adaptation to a new culture following migration and involves changes in attitudes and behaviors as the person becomes more like members of the host culture (11,17). Indeed, acculturation affects not only language, but cognitive style, identity, attitudes, stress, and personality (11). With acculturation, language use can remain Spanish, become bilingual, or change to English. Language use does account for the largest portion of variance in acculturation scales, however, and is the easiest measure of change (18). As a measure of acculturation, language use misclassifies only about 12 percent of respondents (11).

Perceived social influences on smoking. Smoking by friends was measured on a five-point scale ranging from 1 (none) to 5 (all or nearly all). Smoking by older siblings was measured on a four-point scale ranging from 1 (none) to 4 (three or more). Smoking by parents was assessed in separate items for father and mother. To the question "Does your father (mother) smoke cigarettes?" responses included "have no father (mother)," "no," "used to but quit," and "yes." These measures were used to control for the environmental factors in the analyses of smoking.

Procedure. The survey was administered by project staff members. The students completed the questionnaire during a regular 40-minute classroom period. Teachers were not involved in the data collection activities, and the students were assured that their answers would remain confidential. The students also provided a breath sample for carbon monoxide (CO) testing. Although correlations between CO levels and self-reports of smoking behavior among students in

Table 1. Language use and social environmental predictors of current smoking (once a month or more) among New York Hispanic-Latino students surveyed

Predictor	Odds ratio	95 percent confidence interval
Age	1.49	1.19, 1.86
Sex:		
Female ¹	.91	.58, 1.42
Latino group:		
Puerto Rican ¹	...	...
Dominican	1.53	.82, 2.85
South American	.68	.29, 1.59
Other groups or combinations	.79	.42, 1.51
Friends smoke:		
None ¹	...	...
Fewer than 50 percent	5.87	2.74, 12.55
50–100 percent	23.30	11.12, 48.82
Siblings smoke:		
None ¹	...	...
Have no siblings	1.52	.82, 2.81
One	3.17	1.73, 5.82
Two or more	3.24	1.71, 6.14
Mother smokes:		
No ¹	...	...
Yes	1.61	1.00, 2.60
Used to but quit	1.05	.50, 2.18
Father smokes:		
No ¹	...	...
Yes	1.72	1.05, 2.80
Used to but quit	1.58	.77, 3.24
Language spoken to parents:		
Spanish ¹	...	...
English	2.11	.91, 4.86
English and Spanish	2.08	1.11, 3.89
Language spoken to friends:		
English and Spanish ¹	...	...
Only English	.57	.34, .96
Mostly English	.78	.43, 1.40

¹Reference category.

this age group are typically too low to use as an independent validity check, collecting CO samples in conjunction with self-report data has been found to increase the veracity of self-reported smoking data (19). This procedure of collecting biochemical data along with self-report data is referred to as the bogus pipeline procedure and is included in studies of smoking behavior as a means of enhancing the truthfulness of self-reported smoking.

Data analysis. The data were analyzed with SPSS-PC+ software (20,21). Logistic regressions were used to analyze predictors of current smoking for the overall sample and for boys and girls separately. For all the analyses, demographic variables, social influence variables, and language use variables were entered into the equations simultaneously. Persons for whom any of the variables were missing were omitted from the analysis. No significant differences were found for school type, so parochial and public

school data were combined. In the overall analysis, the 101 adolescents who were current smokers—57 girls and 44 boys—were compared with 2,744 other Hispanic-Latino students.

Hispanic-Latino groups were compared using Puerto Ricans as the reference group. For language use with parents, speaking Spanish served as the reference group. In the case of language use with friends, speaking English and Spanish was the reference group.

Results

Predictors of smoking. Table 1 presents the results of the overall logistic regression for current smoking. As reported previously, several demographic and social influence variables emerged as predictors of current smoking. Students who were older, had greater proportions of friends who smoke, and who had family (siblings, mothers, fathers) who smoke were more likely to be current smokers.

Language use and smoking. Language spoken to parents and to friends emerged in both cases as a predictor of current smoking. The odds of being a current smoker were twice as great for students who speak English and Spanish with their parents compared with students who speak Spanish with their parents. Speaking English with parents did not significantly increase the odds of being a smoker relative to speaking Spanish with parents. The odds of being a current smoker were 57 percent less for students who speak English with their friends compared with students who speak English and Spanish with their friends.

To examine the associations between language use and current smoking for boys and girls, separate logistic regressions were conducted. Since the numbers of boys and girls who were current smokers was small, these analyses were considered exploratory. Table 2 presents the results of the logistic regression for current smoking for girls and for boys.

Language use, sex, and smoking. Language spoken with parents did emerge as a predictor of current smoking for boys but not for girls. Specifically, the odds of being a current smoker were increased 4.27 times for boys who reported speaking English and Spanish with their parents, relative to boys who spoke Spanish with their parents. These results suggest that boys seem to be at greater risk for more regular smoking if their home is bilingual. Speaking mostly or only English with parents did not significantly increase the odds of smoking for boys.

Table 2. Language use and social environmental predictors of current smoking (once a month or more) for Hispanic-Latino girls and boys in New York survey

Predictor	Girls		Boys	
	Odds ratio	95 percent confidence interval	Odds ratio	95 percent confidence interval
Age.....	1.62	1.15, 2.28	1.56	1.13, 2.16
Latino group:				
Puerto Rican ¹.....	...	...	...	...
Dominican.....	1.07	.46, 2.51	2.26	.83, 6.20
South American.....	(²)	...	1.98	.71, 5.54
Other groups or combinations.....	.81	.36, 1.85	.73	.24, 2.19
Friends smoke:				
None ¹.....	...	...	...	...
Fewer than 50 percent.....	10.61	3.09, 36.48	3.30	1.16, 9.39
50–100 percent.....	35.40	10.41, 120.34	17.77	6.56, 48.16
Siblings smoke:				
None ¹.....	...	...	...	...
Have no siblings.....	1.58	.73, 3.41	.98	.31, 3.10
One.....	1.69	.70, 4.05	5.75	2.30, 14.39
Two or more.....	2.20	.90, 5.39	4.14	1.53, 11.21
Mother smokes:				
No ¹.....	...	...	...	...
Yes.....	2.00	1.03, 3.87	1.02	.47, 2.21
Used to but quit.....	1.53	.61, 3.86	.46	.12, 1.83
Father smokes:				
No ¹.....	...	...	...	...
Yes.....	1.83	.94, 3.56	1.66	.76, 3.64
Used to but quit.....	1.16	.39, 3.46	2.76	.98, 7.80
Language spoken to parents:				
Spanish ¹.....	...	...	...	...
English.....	2.35	.83, 6.69	1.63	.34, 7.77
English and Spanish.....	1.13	.51, 2.52	4.27	1.40, 13.06
Language spoken to friends:				
English and Spanish ¹.....	...	...	...	...
Only English.....	.61	.29, 1.28	.64	.30, 1.38
Mostly English.....	.95	.45, 2.01	.43	.14, 1.34

¹ Reference category.

² No statistic available with a zero cell.

Language use with parents did not emerge as a predictor of smoking for girls.

Although language use with friends had emerged as a significant predictor of smoking in the analysis of the combined sample, language use with friends did not emerge as a significant predictor of smoking for boys or girls in the separate analyses. The results for the separate logistic regressions do not appear consistent with the overall analysis, but most likely this is because, when analyzed separately, there are smaller numbers of current smokers.

Discussion

In this study we examined language spoken to parents and to friends as a predictor of the smoking status of Hispanic-Latino adolescents. Students living in a bicultural home (speaking English and Spanish with parents) appeared more likely to smoke compared with students living in a less acculturated home (speaking Spanish with parents). Students with a bicultural peer group (speaking English and Spanish

with friends) were more likely to smoke compared with students with a more acculturated peer group (speaking English with friends). Thus being bicultural at home and with friends both appear to increase risk for smoking, at least for the overall sample.

Although using English and Spanish with parents and friends was associated with increased smoking, it is not clear whether this is the result of changed norms for smoking, the stress of the acculturation process on the person, or less family support (relative to a less acculturated, more traditional Hispanic-Latino home). Future research that includes measures of stress and family support could elucidate which explanation best describes why bicultural youth are at increased risk.

Based on acculturation effects among Hispanic-Latino adults (2,13), we expected that acculturation effects might be different for boys and girls. For boys, the pattern of acculturation results was partially consistent with the overall results across sex—living in a bicultural home appeared to be a risk factor for regular smoking. Language spoken to friends, how-

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ever, did not emerge as a significant predictor of smoking for boys.

For girls, language use did not appear to be associated with current smoking status. Thus the separate analyses for boys and girls indicated that acculturation (in the home) may be more associated with smoking for boys than for girls. This finding is consistent with the findings of Smith and colleagues in Boston (9), and may be the result of a differential influence of the family on boys and girls in Hispanic-Latino cultures.

The family is an especially important source of influence in Hispanic-Latino cultures, as is respect for elders and parents, and both have a strong impact on adolescent identity (22). However, the family may influence boys and girls differently. For example, sons in Hispanic-Latino families are allowed greater self-expression and independence, while obedience and traditional roles are emphasized for daughters (22,23).

Although conformity to the peer group increases during adolescence for both girls and boys, peers become especially important in influencing antisocial or risk behaviors in boys (24). In addition, because boys are given more independence than girls, they may be more likely to become part of a peer group that engages in risk behaviors like smoking and drug use (22).

This study was limited to a school-based sample, and the findings may not generalize to adolescents who are not in school. However, this study focused on a period during young adolescence when the dropout rate is still low. In addition, since this study only included Hispanic-Latino students in English-speaking classes, the findings may not generalize to less acculturated Hispanic-Latino populations in bilingual classes. Future studies will be needed to explore smoking and language use among Hispanic-Latino youth in bilingual classes.

Acculturation is a complex process that involves behavioral and cultural adaptation. This study focused on language use, and although language use does appear to be particularly important as a measure of

acculturation (11), it is but one aspect of acculturation. Language use may be especially appropriate as a measure of acculturation for youth, however, since language use (particularly with peers) may be relatively independent of parental influences. For example, measures of acculturation often include items about preferences concerning food, religious practices, choices in terms of reading materials and other media, but parents may influence or determine many of the choices available to young people. A challenge for future studies will be to identify measures that assess the acculturation process in young people more broadly to understand better the extent to which the acculturation process impacts on smoking.

Although membership in a specific Hispanic-Latino subgroup did not emerge as a predictor of smoking in the current study, there are potential differences between the groups represented in the current study that may have implications for prevention and should be explored in future studies. For example, Puerto Ricans are United States citizens, so their adjustment may be less disruptive or difficult compared with the other Hispanic-Latino groups. Dominicans are relative newcomers to this country, compared with Puerto Ricans, as are Ecuadorians and Colombians. If acculturation is associated with smoking because of the stress and disruption it involves, the needs of the community in terms of smoking prevention may be different for Puerto Ricans than for other Hispanic-Latino subgroups in New York City.

This study has important implications for smoking prevention. Specifically, prevention interventions must be developed that are sensitive to the range of cultural experiences of Hispanic-Latino youth. Our results suggest that students in Spanish-speaking homes may be most protected from smoking. Perhaps a greater awareness of Hispanic-Latino culture contributes to this protection. If so, smoking prevention programs that are designed to promote and reinforce cultural awareness might have the strongest effects in reducing smoking. For example, a promising method of promoting cultural awareness and pride among Puerto Rican youth is the folk hero modeling approach developed by Rogler and his colleagues at Fordham University (25).

Bicultural norms may play an important role in determining smoking prevalence, particularly in boys, and interventions designed to adjust those normative expectations might also be productive. Finally, it may be that biculturalism increases stress and tension, as Fitzpatrick (26) suggests, and smoking may serve as a way of coping. In this case, interventions designed to reduce stress (for example, through stress manage-

ment skills training) may be effective. Future studies will be needed to examine the role of acculturation more closely and to determine the specific mechanisms through which acculturation impacts on smoking in Hispanic-Latino youth. Beyond that, evaluation studies will be needed to identify the components of prevention programs that are effective in reducing smoking in Hispanic-Latino youth.

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